

## "ROCKING HIGH-CHAIR FOR CHILDREN"

## BACKGROUND OF THE INVENTION

5 The present invention relates to an innovative high chair with rocking function.

The general purpose of the present invention is to make available in a simple, economical and stout manner a rocking function, even automatic, for a children's high  
10 chair.

## SUMMARY OF THE INVENTION

In view of this purpose it was sought to realize in  
15 accordance with the present invention a children's high chair comprising a supporting frame for a high chair for receiving the child with the frame comprising a pair of legs openable compasswise and with lower ends for resting on the ground and stiffening crosspieces arranged on both  
20 sides of the frame and movable between a non-operational position allowing closing of the frame and an operational position in which the crosspieces engage the legs to hold them steadily in open position characterized in that the crosspieces are equipped with an upper surface designed for  
25 ground support and can be moved to another more lowered operational position to rest on the ground with said lower surface for lifting said lower ends from the ground to constitute high chair rocking members.

## BRIEF DESCRIPTION OF THE DRAWINGS

To clarify the explanation of the innovative principles of the present invention and its advantages compared with the prior art there is described below with the aid of the annexed drawings a possible embodiment thereof by way of non-limiting example applying said principles. In the drawings:

FIG 1 shows a diagrammatic rear side perspective view of a high chair in accordance with the present invention,  
FIG 2 shows a view in closed position of the high chair of FIG 1,  
FIG 3 shows a view similar to that of FIG 1 but with the high chair in rocking position,  
FIG 4 shows an enlarged partial rear perspective view of a detail of the high chair of FIG 1,  
FIG 5 shows an enlarged partial view of a variant embodiment of another detail of the high chair of FIG 1, and  
FIGS 6 and 7 show diagrammatic views of another embodiment of a high chair in accordance with the present invention.

## DETAILED DESCRIPTION OF THE INVENTION

With reference to the figures, FIG 1 shows designated as a whole by reference number 10 a high chair for children comprising a support frame 11 for a high chair 12 for receiving a child. The high chair may be adjustable in height on the frame and can comprise a front tray 13.

The frame comprises two legs 14, 15 which can be opened compasswise by means of an upper hinging member 46. Each leg is advantageously made up of a pair of parallel tubular members 16, 17 placed on the two sides of the high chair

5 and interconnected below by a connecting crosspiece member 18. The lower ends of the legs are for resting on the ground and can advantageously be equipped with rollers 19. On the two sides the frame also comprises stiffening crosspieces 20 which are engaged between the legs to hold

10 the legs rigidly in open position. As may be seen from a comparison of FIGS 1 and 2 said crosspieces 20 are movable between the operational position of FIG 1 and the non-operational position of FIG 2 allowing closing of the frame with approach of the legs.

15 To move between the operational and non-operational positions the crosspieces 20 have one end hinged at 21 to one leg of the pair to rotate between a raised non-operational and a lowered operational position. The other end of the crosspieces is advantageously fastened

20 by a pin at 22 to a cursor 23 which runs on the other leg of the pair. Advantageously the hinging leg is the front leg 15 while the running leg of the cursor is the front leg 14.

25 With the legs formed by two parallel tubular members the cursors of the two crosspieces are mutually interconnected to form a single bar member 24 running along the corresponding leg. The running member is equipped with releasable locking means of running along the leg. For height adjustment the high chair runs along the

corresponding tubular members of the other leg 15 by means of cursors 25 which are also equipped with releasable locking means (not shown).

The crosspieces 20 are shaped with lower surface curved 5 upward and can be moved to another operational position lower than the stiffening operational position of FIG 1 so as to rest on the ground and constitute shoes for rocking of the high chair. In this further lowered operational position the supporting ends of the legs rise from the 10 ground and the high chair can rock on the shoes consisting of the crosspieces with the supporting ends of the legs constituting alternatively the end of travel of the rocking movement. This is all shown clearly in FIG 3.

The running member 24 therefore has three releasable 15 locking positions corresponding to the non-operational position (FIG 2), the operational "high chair" position (FIG 1) and the additional lower operational rocking position (FIG 3). In the closed position there can be provided an engagement member 36 between the legs for safe 20 holding in this position, for example during transportation. As may be seen in FIG 2, the legs and the compasswise hinging can be sized so that the high chair will remain standing even in the closed position.

FIG 4 shows diagrammatically a possible advantageous 25 realization of the releasable locking means. As may be seen in this figure the locking means comprise a control handle 26 arranged centrally on the running member 24. The handle controls through a transmission 27 the movement (against the action of a spring 28) of locking pins 29 present

within the respective cursors 23. The figure shows a single pin with the other being symmetrically equal in the other cursor.

Pushed by the respective spring the pins 29 engage in one 5 of three engagement holes 30, 31, 32 corresponding to the three above mentioned positions of the crosspieces. By pulling the handle 26 upward the pins are withdrawn from the hole and the cursor running member 24 can be move to one of the other engagement positions.

10 In accordance with a variant embodiment of the present invention there can also be provided a mechanical rocking device 33 so that the rocking can be automated when required. As may be seen in FIG 5 this mechanical rocking device (advantageously integrated on one of the two 15 crosspieces 20) comprises a member or pin 34 which is powered (for example by means of a cam) to project rhythmically earthward so as to push on the ground when the crosspieces are in the lowest operational position. The device is powered by batteries 35 which can be contained in 20 a space 37 made in the crosspiece. A switch (not shown) activates the device when desired.

FIG 6 shows a side view of another embodiment of a high chair in accordance with the present invention. For the sake of simplicity members similar to the above embodiment 25 are designated below by the same number increased by 100.

In its general structure the high chair 110 is similar to the high chair of the above embodiment. There is thus a frame 111 supporting a baby's chair 112 comprising tubular legs 114, 115 formed of tubular members 116, 117 on the two

sides of the baby's chair and openable compasswise by means of a hinging 146. The lower ends of the legs are for ground support and can advantageously be equipped with rollers 119.

5 On both sides the frame also comprises stiffening crosspieces 120 which intervene to engage between the legs to hold the legs rigidly in open position. Similarly to the crosspieces 20 the crosspieces 120 are movable between an operational and a non-operational position allowing closing  
10 of the frame with approach of the legs.

For movement between the operational and non-operational positions the crosspieces 120 have one end hinged at 121 to a leg. The other end of the crosspieces is advantageously pinned at 122 to a cursor 123 running on the other leg of  
15 the pair. The two cursors are interconnected to form a single bar member 124. A handle 126 allows handling by means of a mechanism similar to the above embodiment and therefore not further shown.

FIG 6 shows in broken lines the first operational position  
20 of the crosspieces 120 while the second and lower operational position is shown in solid lines where the crosspieces 120 touch the ground and raise the leg supporting wheels again similarly to the embodiment of FIG 1.

25 The crosspieces 120 have a lower part 140 realized as a separate part to form a ground support member. Differently from the above embodiment the support surface is not curved for rocking support but on the contrary is shaped (flat for example) to provide steady support and is mounted swinging

on the remaining crosspiece part.

As may be seen in FIG 7 where a cross section of a crosspiece is shown, the member 140 is received partially in the crosspiece to protrude below and is hinged centrally 5 at 141 to the interior of the crosspiece. The part 140 is held centered in its swinging movement by an elastic force produced by an elastic member and in particular a leaf spring 142. The force of the spring is chosen to hold the separate support part 140 of the crosspiece centered in its 10 swinging arc, i.e. to hold the high chair virtually vertical on the support consisting of part 140 while at the same time allowing a rocking movement around the pin 141 when a relatively small external force is applied.

Advantageously the top surface 147 of the ground support 15 part is curved and on it rests and rocks an internal surface 148 of the crosspiece so that the weight of the high chair is not all relieved on the pin 141 whose only function is holding the two members centered but is supported by the two surfaces in contact.

20 The entire high chair can thus swing around the point 141 to have the rocking effect appropriately controlled and limited by alternating contact of the front and rear wheels on the ground.

As the rocking movement takes place between the support 25 part 140 and the rest of the crosspiece and not between the crosspiece and the ground, the force necessary for rocking of the high chair is independent of the type of surface occurring on the ground. This allows for example having rocking without effort even if the high chair is resting on

a thick rug or the like.

A screwing adjustment ringnut 143 acts between the ground support part and the rest of the crosspiece and allows inclination of the base with respect to the ground and 5 consequently moving the center of gravity of the whole. This allows optimizing use of the product as a function of the child's weight.

The solution of FIGS 6 and 7 also allows having a powered movement by means of a control 133. To this end it was 10 found advantageous to fit a gearmotor 144 at one end of the crosspiece made hollow. The gearmotor is powered by batteries 135 contained in a space in the crosspiece and, through a connecting rod 145, transmits rocking motion to the base with respect to the rest of the frame. An 15 interrupter 146 allows operation of the gearmotor.

It is now clear that the predetermined purposes have been achieved by making available a high chair with simple and stout structure in which the stiffening crosspieces are also members allowing easy conversion of the high chair 20 into a safe swing, advantageously with powered rocking also.

Naturally the above description of an embodiment applying the innovative principles of the present invention is given by way of non-limiting example of said principles within 25 the scope of the exclusive right claimed here. For example the aesthetic form, proportions and arrangement of the various parts can vary depending a specific requirements or preferences.